

Columbia Falls Maintenance Plan
September 2005 Maintenance Event

1. Identification of specific air pollution control equipment to be maintained

CFAC's east dry alumina scrubber has a bleed air system that is used to add ambient air into the gas stream for the purpose of cooling the gas stream and preventing heat-related damage to the baghouse bags. The bleed air system has two (2) 90 degree elbows that need to be replaced due to erosion. These pieces of ductwork are approximately 52 inches in diameter. Figure 1 attached is a photograph of the ductwork.

2. Explanation of Need:

The two (2) 90 degree elbows of the bleed air system have holes caused by erosion. During the past year, CFAC temporarily patched these holes to prevent the escape of pot gases to ambient air. CFAC requests approval from MDEQ to shutdown the east dry alumina scrubber for four (4) hours in order to permanently replace these two pieces of ductwork and prevent future excess emissions from erosion holes.

An alternative to shutting down the east dry alumina scrubber for four (4) hours to replace the ductwork, is to completely shutdown Potline 5, perform the required ductwork replacement work, and then restart Potline 5. This alternative would cause extreme hardship to both CFAC and the environment for the following reasons:

- As described in Table 1, fluoride emissions from shutting down Potline 5, replacing the ductwork and restarting the potline are estimated to be 25 tons. Performing the maintenance as proposed while shutting down the scrubbing system for four (4) hours, and continuing to operate the potline, results in fluoride emissions of 0.38 tons, which is significantly less.
- Shutdown and restart of Potline 5 would create a massive operational hardship for CFAC by totally disrupting aluminum production schedules and potentially placing CFAC in default with customer contracts. Aluminum smelters are not easily restarted and it often takes six months after restart before processes within the reduction cells stabilize and aluminum is reliably produced. If CFAC's Potline 5 is shut down, raw material shipments, and particularly alumina, would require re-scheduling and/or storage until the plant restarted and was stabilized in operation. Alumina is received by CFAC through a combination of rail and sea transportation. CFAC's alumina comes from various locations around the world and scheduling of shipments is a complicated task.
- Shutdown and restart of the potline would create a severe financial hardship for CFAC. CFAC currently operates one potline and it is estimated to cost approximately \$1.5 million to start up a shutdown potline.

For the above stated reasons, the shutdown and restart of the facility does not yield any public health or safety benefits, and actually causes more emissions to the environment.

3. Description and quantity of air contaminants

During the four (4) hour maintenance period, the east dry scrubber will be shut down. Pot gases, containing gaseous fluoride, particulate fluoride, POM, and PM10 will be emitted from the potrooms. Fluoride emissions estimates during the maintenance event are presented in the lower part of Table 1. Table 2 presents estimates of Potline #5 PM-10 emissions during normal operations and during the proposed maintenance event. It is estimated that the 24-hour PM-10 emissions during the day of maintenance will exceed normal 24-hour, daily PM-10 emissions by 656.8 pounds.

4. Description of specific procedures to minimize length of maintenance period

The following activities will be done to minimize the length of the maintenance period:

The ductwork will be pre-fabricated and ready for installation prior to shutting down the dry alumina scrubber.

All equipment (juglift, etc) and manpower will be staged in place and will be ready for installing the ductwork prior to shutting down the dry alumina scrubber

Every-other-bolt on the flange of the existing ductwork will be removed prior to shutting down the dry alumina scrubber to minimize the scrubber down time. Remaining bolts will be removed after the scrubber is shut down.

5. Description of specific procedures to minimize uncontrolled PM-10 emissions

During the 4-hour maintenance period, CFAC will curtail the following operations that have the potential to cause PM-10 emissions:

CFAC will not conduct reduction cell tapping during the maintenance period

CFAC will not conduct pin pulling activities during the maintenance period

CFAC will not rake reduction cells during the maintenance period

CFAC will not tap cryolite bath during the maintenance period

6. Citation of permit requirements that might not be complied with during maintenance event

The following permit requirements may not be complied with during the maintenance event:

Rule Citation	Description
17.8,.302	Incorporation by Reference
17.8.304	Visible Air Contaminants
17.8.308	Particulate Matter, Airborne
17.8.111	Circumvention
17.8.715 (2)	Emission Control Requirements
17.8.1404	Visible Air Contaminants
17.8.331	Emission Standard for Existing Aluminum Plants – Fluoride Emissions
17.8.332	Emission Standard for Existing Aluminum Plants – Visible Emissions
17.8.342	Emission Standards for Hazardous Air Pollutants for Source Categories

7. Expected date of maintenance event

The maintenance event will take place beginning at 9:00 am on September 13, 2005.

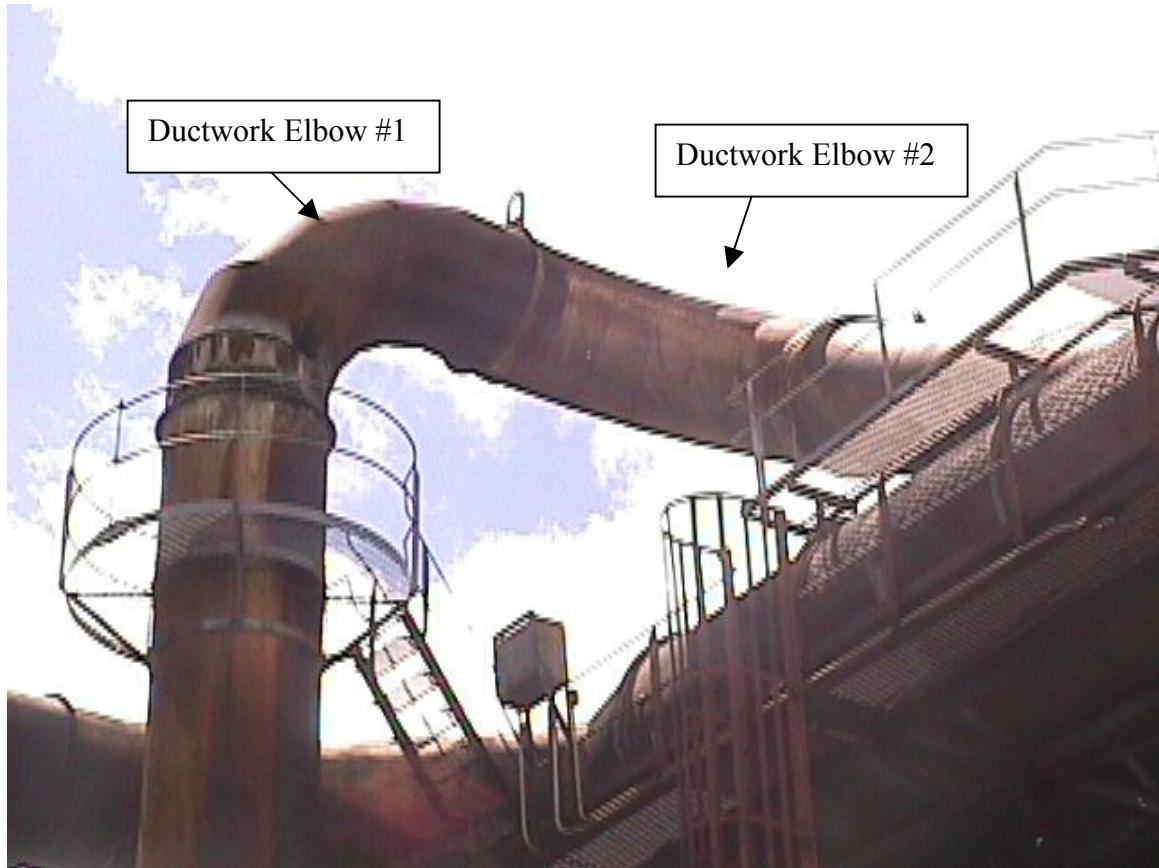


Figure 1: Ductwork Elbows

Table 1: CFAC 2005 Ductwork Replacement Project
Emissions Estimate

Potline Restart Emissions Estimate ¹							
Potline Restart Time	Fluoride Emission Factor	Units	Emission Factor Reference	Aluminum Production ton/hr	Hours per Month	Emissions During Restart	
						Ibs/month	tons/month
Restart Month 1 (20 days)	25.6	Ibs F/ton aluminum	2002 Restart of Potline 4	1.2	480	14,746	7.4
Restart Month 2	3.2	Ibs F/ton aluminum	2002 Restart of Potline 4	4.05	720	9,331	4.7
Restart Month 3	4.8	Ibs F/ton aluminum	2002 Restart of Potline 4	4.11	744	14,678	7.3
Restart Month 4	3.7	Ibs F/ton aluminum	2002 Restart of Potline 4	4.13	720	11,002	5.5
Total							25

1 This estimate is based on the restart experience of potline 4 for the year 2002. Potline 4 was restarted on March 11, 2002 and did not meet the 2.6 lb F/ton aluminum emission standard until the 5th month of operation. The above estimate is based on the restart emissions for the first four months of restart.

Emissions During Maintenance Estimate							
Pollutant	Uncontrolled Emission Factor	Units	Emission Factor Reference	Aluminum Production ton/hr	Duration of Maintenance Hrs	Emissions During Maintenance	
						Ibs	tons
Gaseous Fluoride	33	Ib F/ton aluminum	Table 12.1-1, Compilation of Emission Factors, AP-42	4.3	4	568	0.28
Particulate Fluoride	11	Ib F/ton aluminum	Table 12.1-1, Compilation of Emission Factors, AP-42	4.3	4	189	0.09
Total Fluoride							0.38

Table 2
CFAC Primary System Ductwork Maintenance Project
Scheduled for September 13, 2005
PM-10 Emissions Estimate

Emission Source	Aluminum Production ton/hr	PM10 Emission Factor ¹ lb PM10/ton aluminum	PM10 Uncontrolled Emissions lb/hr	Scrubber/Baghouse Collection Efficiency %	Controlled PM10 Emission Rate lb/hr	Number of hours	PM10 Emissions lb/day
Potline #5 - Normal Emissions							
Primary Emissions	4.3	38.3	164.7	99.70%	0.5	24	11.9
Secondary Roof Emissions	4.3	3.7	15.9	0.00%	15.9	24	381.8
Total Emissions							393.7
Potline # 5 -Maintenance Event Emissions							
Primary Emissions- Uncontrolled	4.3	38.3	164.7	0.00%	164.7	4	658.8
Primary Emissions- Controlled	4.3	38.3	164.7	99.70%	0.5	20	9.9
Secondary Roof Emissions	4.3	3.7	15.9	0.00%	15.9	24	381.8
Total Emissions							1050.5
Difference of Maintenance Event Emissions and Normal Emissions							656.8

¹ PM10 emission factor is based on agreement between Bison Engineering, CFAC and MDEQ

Emission factor calculated by Bison and confirmed by MDEQ (Bison Memo to MDEQ dated 9/11/00, and Memo from MDEQ dated September 15, 2000).